Self-Supervised Learning for Recommender Systems: A Survey

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Abstract

In recent years, neural architecture-based recommender systems have achieved tremendous success, but they still fall short of expectation when dealing with highly sparse data. Self-supervised learning (SSL), as an emerging technique for learning from unlabeled data, has attracted considerable attention as a potential solution to this issue. This survey paper presents a systematic and timely review of research efforts on self-supervised recommendation (SSR). Specifically, we propose an exclusive definition of SSR, on top of which we develop a comprehensive taxonomy to divide existing SSR methods into four categories: contrastive, generative, predictive, and hybrid. For each category, we elucidate its concept and formulation, the involved methods, as well as its pros and cons. Furthermore, to facilitate empirical comparison, we release an open-source library SELFRec (https://github.com/Coder-Yu/SELFRec), which incorporates a wide range of SSR models and benchmark datasets. Through rigorous experiments using this library, we derive and report some significant findings regarding the selection of self-supervised signals for enhancing recommendation. Finally, we shed light on the limitations in the current research and outline the future research directions.